

Translation Practice and Strategies for Environmental Governance Academic Texts: A Case Study of Chapters 13–14 of Research on the Overall Collaborative Governance Mechanism and Model of Cross-Domain Atmospheric Ecological Environment

Huan Yang

School of Foreign Languages, The University of Shanghai for Science and Technology, Shanghai, China
Email: 28464686754@qq.com

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Abstract

Against the background of global ecological governance and cross-border environmental cooperation, the international dissemination of Chinese academic achievements in environmental governance has grown increasingly important. Environmental governance academic texts are characterized by dense technical terms, complex long sentences, strict logical reasoning, and interdisciplinary integration, all of which pose prominent challenges in Chinese-English translation. Based on the practical translation of Chapters 13 – 14 of Research on the Overall Collaborative Governance Mechanism and Model of Cross-Domain Atmospheric Ecological Environment, this study focuses on the linguistic features, core difficulties, and targeted strategies of such texts. Guided by Nida's functional equivalence theory, this paper summarizes four major translation difficulties: terminology consistency, long-sentence restructuring, logical explication, and discourse coherence. On this basis, four practical strategies are proposed: standardized terminology management, syntactic restructuring, logical supplementation, and academic discourse normalization. Through case analysis of terms, sentences, and paragraphs, this study verifies the effectiveness of the strategies and further discusses translation principles for interdisciplinary academic texts. The findings show that the combination of theoretical guidance and practical operation can significantly improve the accuracy, fluency, and academic normativity of translated texts. This study not only enriches empirical research on environmental governance translation but also provides referential methods and perspectives for postgraduates, translators, and scholars engaged in related fields.

Keywords

Environmental Governance; Academic Text Translation; Functional Equivalence; Translation Strategy

1. Introduction

1.1. Research Background

In recent decades, China has made remarkable progress in cross-regional atmospheric governance, ecological environment monitoring, and coordinated prevention and control of air pollution. A large number of academic works have systematically explored institutional mechanisms, technical paths, data models, and practical experience in environmental governance. These achievements are of great theoretical value and practical significance for global environmental governance. Translating such academic works into English helps promote international academic exchanges, display China's governance experience, and enhance cooperation in global ecological protection.

However, environmental governance texts are typical interdisciplinary academic texts covering environmental science, statistics, public management, applied economics, and policy analysis. Such texts are characterized by high terminological density, long and complicated sentences, implicit logical relations, and strict academic norms. In actual translation practice, problems such as inconsistent terms, rigid sentence structures, ambiguous logic, and inconsistent academic styles often occur, which seriously affect the accuracy and acceptability of target texts. Therefore, systematic translation practice and strategy research based on real academic texts is particularly necessary.

1.2. Research Object

This study takes Chapters 13 and 14 of Research on the Overall Collaborative Governance Mechanism and Model of Cross-Domain Atmospheric Ecological Environment as the translation corpus. Chapter 13 constructs a layout optimization method for atmospheric environment monitoring networks based on principal component analysis and cluster analysis, and conducts empirical verification with Shanghai and its surrounding areas as cases. Chapter 14 further improves the accuracy of redundant monitoring station identification by using multiple linear regression analysis and support vector regression. The two chapters are rich in content, standardized in format, and typical in text type, covering technical terms, mathematical models, empirical analysis, and methodological discussion. They can fully reflect the linguistic features and translation difficulties of environmental governance academic texts, making them ideal corpora for translation research.

1.3. Research Significance

Theoretically, this study takes functional equivalence theory as the core framework and applies it to interdisciplinary academic text translation, expanding the

application scope of the theory and enriching empirical research in environmental translation. Practically, this study extracts operable translation strategies for terminology, sentences, logic, and discourse, which can provide direct references for translators, researchers, and postgraduates engaged in environmental science, public management, and ecological governance translation. Socially, this study helps improve the quality of English translations of Chinese environmental governance achievements and promote the international dissemination of Chinese experience.

1.4. Research Methods and Structure

This study adopts documentary analysis, case analysis, comparative analysis, and inductive summary. Guided by functional equivalence theory, typical examples are selected from the corpus to analyze translation difficulties and verify the effectiveness of strategies. The paper consists of six parts: introduction, theoretical foundation, textual features and difficulties, translation strategies and case analysis, discussion on interdisciplinary translation principles, and conclusion.

2. Theoretical Foundation: Functional Equivalence Theory

2.1. Core Ideas of Functional Equivalence

Functional equivalence theory, proposed by Eugene A. Nida in the 1960s, is one of the most influential theories in modern translation studies. Nida emphasizes that translation is not mechanical formal correspondence, but the reproduction of source text information and function. The core proposition is that the target text should enable target readers to obtain the same understanding and experience as source readers obtain from the original text.

Functional equivalence includes two levels: formal equivalence and dynamic equivalence. Formal equivalence focuses on consistency in linguistic form, while dynamic equivalence prioritizes equivalence in communicative effect. For academic texts, dynamic equivalence is more practical because academic translation aims to accurately convey knowledge, clarify logic, and maintain academic norms rather than mechanically copy sentence structures.

2.2. Three Dimensions of Equivalence in Academic Translation

2.2.1. Terminological Equivalence

Professional terms must be accurate, unified, and consistent with international academic expressions to ensure correctness in knowledge transmission.

2.2.2. Syntactic Equivalence

Sentence structures should conform to English academic norms, with clear logic and appropriate expression, avoiding literal translation that leads to grammatical confusion.

2.2.3. Discourse Equivalence

The overall coherence, objectivity, and rigor of the text should be maintained, and logical relations should be explicit to meet the reading habits of international readers.

2.3. Applicability to This Study

The corpus of this study is a typical academic text featuring professionalism, logicity, and objectivity. Functional equivalence theory provides clear standards for terminology unification, long-sentence processing, logical expression, and discourse construction. It can effectively guide translators to balance accuracy, fluency, and academic normativity and solve real problems in translation practice.

3. Linguistic Features and Translation Difficulties

3.1. Major Features of Environmental Governance Academic Texts

3.1.1. High Interdisciplinarity and Professionalism

The text integrates environmental science, statistics, public management, and computer modeling. Terms such as principal component analysis, cluster analysis, support vector regression, redundant monitoring station, and air quality monitoring network (AQMN) are widely used, requiring high professionalism in translation.

3.1.2. Long and Complicated Sentences

Chinese academic texts commonly use long sentences with multiple modifiers, clauses, and parallel structures. These sentences often lack obvious subjects and rely on semantic coherence, which is incompatible with English syntactic habits.

3.1.3. Implicit Logical Relations

Chinese tends to express logical relations implicitly through context, while English academic writing requires explicit logical markers such as therefore, however, furthermore, and in summary. Implicit logic often leads to incoherent discourse in translation.

3.1.4. Strict Objectivity and Formal Style

The text uses objective description, data analysis, and model interpretation without emotional color. The translated text must maintain a formal, accurate, and impersonal academic style.

3.2. Core Translation Difficulties

3.2.1. Terminology Consistency and Standardization

A large number of professional terms and policy expressions lack unified English equivalents. Improper translation will directly lead to misunderstanding of academic concepts.

3.2.2. Long-Sentence Restructuring

Chinese long sentences often stack multiple layers of information. Direct literal

translation will result in cumbersome, unreadable, and even illogical English sentences.

3.2.3. Logical Explicitation

Implicit logic in Chinese must be converted into explicit logical connections in English; otherwise, argumentation will be loose and unclear.

3.2.4. Academic Normativity

The translated text must conform to English academic writing conventions, including tense, voice, vocabulary, format, and citation. Non-standard expressions will reduce the academic quality of the text.

4. Translation Strategies and Case Analysis

4.1. Strategy 1: Terminology Standardization and Unification

Establish a term list and adopt internationally accepted academic expressions to ensure accuracy and consistency.

4.1.1. Examples of Terminology Translation

Original: 跨域大气生态环境整体性协作治理机制

Translation: overall collaborative governance mechanism for cross-domain atmospheric ecological environment

Original: 冗余监测站

Translation: redundant monitoring station

Original: 主成分分析-聚类分析

Translation: principal component analysis-cluster analysis

Original: 累计方差贡献率

Translation: cumulative variance contribution rate

Original: 支持向量回归

Translation: support vector regression

4.2. Strategy 2: Long-Sentence Restructuring and Syntactic Normalization

4.2.1. Examples of Sentence Restructuring

Original: 本章将主成分分析、聚类分析法在识别城市相似污染源与污染行为及冗余监测站等方面的优势和指派法有机结合，构建跨域大气生态环境监测网络布局优化的方法体系。

Translation: This chapter integrates the advantages of principal component analysis and cluster analysis in identifying similar urban pollution sources, pollution behaviors and redundant monitoring stations with the assignment method, and constructs a methodological framework for optimizing the layout of cross-domain atmospheric ecological environment monitoring networks.

Original: 为有效评价 AQMN 绩效，准确识别冗余监测站和缺乏监测站的位置，从跨

域视角出发，借鉴匈牙利指派法。

Translation: To effectively evaluate AQMN performance and accurately identify redundant monitoring stations and underserved locations, this study adopts the Hungarian assignment method from a cross-regional perspective.

4.3. Strategy 3: Logical Explicitation and Discourse Coherence

4.3.1. Examples of Logical Explicitation

Original: 现有研究方法较为单一，未能精准识别冗余站点。本文采用组合模型提升识别精度。

Translation: Existing research methods are relatively simple and fail to identify redundant stations accurately. Therefore, this study adopts a combined model to improve identification accuracy.

4.4. Strategy 4: Academic Style Normalization

4.4.1. Examples of Academic Style Adjustment

Original: 我们发现上海周边五个监测站与上海市区具有显著相关性。

Translation: A significant correlation is identified between the five stations surrounding Shanghai and urban Shanghai.

Discussion: Translation Principles for Interdisciplinary Academic Texts

5. Discussion: Translation Principles for Interdisciplinary Academic Texts

5.1. Principle of Accuracy

Academic translation must prioritize the accuracy of concepts, data, and logic.

5.2. Principle of Consistency

Terms, expressions, and formats must be consistent throughout the text.

5.3. Principle of Academic Normativity

The target text must conform to international academic writing conventions.

5.4. Principle of Reader Orientation

The translation should meet the reading habits of international scholars to ensure effective communication.

6. Conclusion

This study takes Chapters 13 – 14 of Research on the Overall Collaborative Governance Mechanism and Model of Cross-Domain Atmospheric Ecological Environment as the translation corpus and explores translation strategies under the guidance of functional equivalence theory.

The main conclusions are as follows:

1. Environmental governance academic texts are characterized by interdisciplinarity, long sentences, implicit logic, and formal style.
2. The core translation difficulties include terminology consistency, long-sentence restructuring, logical explication, and academic normativity.
3. Four strategies—terminology standardization, syntactic restructuring, logical supplementation, and discourse normalization—can effectively improve translation quality.
4. Interdisciplinary academic translation should follow the principles of accuracy, consistency, normativity, and reader orientation.

Limitations: This study only takes two chapters as the corpus. Future research can expand text types and combine reader response evaluation to further optimize strategies.

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References

- [1] Nida, E. A. (1964). *Toward a Science of Translating*. Brill, Leiden.
- [2] Munday, J. (2016). *Introducing Translation Studies* (4th ed.). Routledge, London.
- [3] Pires, A. M., Martins, F. G., & Pereira, M. C. (2008). Assessment of air quality monitoring networks using cluster analysis. *Environmental Monitoring and Assessment*, 140(1), 111 – 122.
- [4] Requia, W. J., Higgins, S. J., & Brauer, M. (2019). Spatial clustering analysis of air pollution monitoring sites. *Journal of Environmental Management*, 233, 862 – 870.
- [5] Song, Y., Li, C., & Wang, Y. (2023). Optimization of urban air quality monitoring networks using PCA and cluster analysis. *Sustainability*, 15(4), 3211.
- [6] Zhang, Y. (2021). Research on layout optimization of atmospheric environment monitoring networks. *Chinese Journal of Environmental Science*, 42(5), 2100 – 2108.
- [7] Zhou, Y. (2022). Collaborative governance mechanism of cross-regional atmospheric pollution. *Ecological Economy*, 38(4), 18 – 24.
- [8] Zhao, Y., Wang, S., & Zhang, L. (2015). Optimization of air quality monitoring networks in the Yangtze River Delta. *Journal of Environmental Sciences*, 33, 112 – 120.
- [9] d' Urso, P., Giordani, P., & Vichi, M. (2013). Fuzzy clustering for environmental data. *Environmental Modelling & Software*, 40, 112 – 121.
- [10] Galán-Madruga, M. J., et al. (2021). PCA and regression analysis in environmental research. *Environmental Science and Pollution Research*, 28(14), 17612 – 17624.